

STUDIES OF ALFVEN WAVES OF SMALL TRANSVERSE SCALE*

G.J. Morales, F.S. Tsung and J.W. Tonge

Physics and Astronomy Department, UCLA

An overview is presented of analytical and computational studies of shear Alfvén waves whose scale transverse to the confining magnetic field is on the order of the electron skin-depth or the ion Larmor radius. The analytical studies illustrate the process of direct conversion of a large-scale mode into short-scale waves produced by interactions with ambient density irregularities. A discussion is also presented of the filamentation induced by ambient cross-field flows. The computational studies use a particle-in-cell code to explore nonlinear interactions resulting from the excitation of large amplitude waves at a remote boundary. Some of the related phenomena include electron acceleration, formation of density channels and trapping of standing Alfvén waves.

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